Soft Computing, Uncertainty and Imprecision in Image Processing

Organizers:

Irina Perfilieva, Javier Montero, Humberto Bustince, as Coordinators of the EUSFLAT WG on Soft Computing in Image Processing, see https://www.eusflat.org/society-wg-scip.html

Isabelle Bloch, Sorbonne Université, France

Olivier Strauss, Université de Montpellier, France

Carlos Lopez Molina, Public University of Navarra, Spain

Description:

This session aims at gathering researchers interested and involved in uncertainty issues in processing and analysis of images, in various applications. Uncertainty (in a broad sense) can pertain to data, to knowledge guiding their analysis, to processing steps and to the analysis results. At the same time, this session will discuss methods for improving image quality, which is affected by inaccuracies caused by image acquisition or processing. We are talking about eliminating visible defects (noise, blurred edges, etc.) and restoring the original information contained in the image. The theoretical issues are at the core of many EUSFLAT topics. Here the aim of the session would be address them in the specific context of image analysis, and more generally spatial information processing. This special session is a joint event with the EUSFLAT Working Group on Soft Computing in Image Processing, which will encourage EUSFLAT members to contribute and promote discussions.

Examples of topics include:

• Representation models, types of uncertainties (epistemic, aleatoric, imprecision…).

• Reasoning under uncertainties or conflict, approximate reasoning.

• Integration of imprecision and uncertainty in the analysis process, either by repairing, by dealing with them (e.g. as metadata), by ignoring them, etc.

• Evaluation of uncertain results, making them useful to the users.

• Discussion about the necessity or opportunity to quantify uncertainty.

• Detect defects in digital images by estimating the degree of uncertainty of individual areas.

• Improving the quality of images by eliminating their defects.